

### **Amendments to the Specification:**

The Applicant submits an amended specification which corrects informalities noted by the Applicant and which clarifies the earlier disclosures. The amended specification is submitted showing both the clean version and a marked up version indicating the amendments, pursuant to 37 CFR 1.125.

The following is a marked-up version showing the amendments to the specification.

### **ABSTRACT**

~~\_\_\_\_\_ The Anchor Assist~~ An anchor retrieval assist device including ~~is a wider and higher type of "U" shaped type of boat bow chock-rope guide and anchor staging and storage devised device~~ which allows buoy type anchor retrieval ~~devised devices~~ to be pulled through the guide without rope removal. It is designed to allow pulling of ~~an~~ the anchor via the buoy retrieval system with ~~a~~ the rope routed through the ~~Anchor Assist device~~ and attached to ~~a~~ the bow or other forward cleat point on a boat. It is designed to allow the resting The anchor can ~~to be easily released from its storage-rest position by raising the anchor rope, rope. This tipping of the anchor to allow~~ allows it to release and roll off the bow rest position into the water. ~~his "U" shaped rest is a formed frame, gusset platform, rollers and guides that provide a sure rope guide and a secure platform for anchor retrieval and storage. A pin device is used provided to secure the anchor in the rest position, during transition or travel. \_\_\_\_\_ Other bow anchor rests and chocks do not allow retrieval of the anchor and retrieval mechanism without rope removal from the bow chock or guide. The anchor is in position for the next release when brought to rest in the Anchor Assist~~ The device works equally well with or without mechanical buoy type retrievers for anchoring and retrieving the anchor manually. ~~This device provides inventive changes with advantages over other existing designs.~~

## BACKGROUND AND SUMMARY OF THE INVENTION

~~\_\_\_\_\_ The Anchor Assist anchor assist device was designed and created for boat anchoring to fill a void in the market for boat anchoring and retrieval of anchor systems utilizing mechanically designed anchor float retrieval systems. Other pullers require removing the rope from the anchor chock and pulling the buoy, retrieving mechanism, lead chain (when used) and anchor up and over the side of the bow, often damaging the gunnel or sides of the boat.~~

In this device, the anchor puller and buoy are able to be pulled through the wider roller and guide system without removal from the rope guide. The primary design difference, not previously available, is the use of a metal step roller bracket which is designed to have a wide enough throat space to accommodate the various buoy puller mechanisms (such as, but not limited to EZ Marine lifter, Ironwood Pacific puller, and other types)} with vertical guides to keep the rope in the device while the puller transitions through it and buoy transitions over it.

~~\_\_\_\_\_ This device provides other inventive changes with advantages over other existing designs. In particular, other bow anchor rests and chocks do not allow retrieval of the anchor and retrieval mechanism without rope removal from the bow chock or guide. Other buoy puller mechanisms require removing the rope from the anchor chock and pulling the buoy, retrieving mechanism, lead chain (when used) and anchor up and over the side of the bow, often damaging the gunwale or sides of the boat.~~

## BRIEF SUMMARY OF THE INVENTION

~~\_\_\_\_\_ The anchor assist device is a wider and higher type of "U" shaped type of boat bow chock-rope guide and anchor staging and storage device which allows buoy type anchor retrieval devices to be pulled through the guide without rope removal. It is designed to allow pulling of the anchor via the buoy retrieval system with the rope routed through the device and attached to the bow or other forward cleat point. It is designed to allow the resting anchor to~~

be easily released from its storage-rest position by raising the anchor rope. This tipping of the anchor allows it to release and roll off the bow rest position into the water. The “U” shaped rest, formed by a frame, gusset platform, rollers and guides, provides a sure rope guide and a secure platform for anchor retrieval and storage. A pin device is used to secure the anchor in the rest position during transition or travel. The anchor lies on the device in the rest position, ready to release without the pin device installed. The anchor is in position for the next release when brought to rest in the anchor assist device. The device works equally well without mechanical buoy type retrievers for anchoring and retrieving the anchor manually.

\_\_\_\_\_ A tapered center roller guide (of UHMW polyethylene or similar material), of large enough diameter allows the transition from rope end, past the lifter hardware and on to the anchor chain (when used) and directly to the anchor, so that the anchor settles to rest in the bracket on the gusset platform and center roller UHMW-guides in the bracket. A rope groove is cut in the center of the center roller guide to help provide a positive center line position for the rope while at anchor.

\_\_\_\_\_ Outside ~~non-rolling~~ vertical right and left side guides fashioned from the same material as the center ~~main-roller~~ guide (UHMW ~~plastic~~ polyethylene) provide a smooth protective surface for the rope to ride against when under power of retrieval and keeps the rope from contacting the outer extremities of the metal mount ~~or~~ rest roller framework. These guides may be either of two types, depending on the version selected. The regular version is non-rolling. The deluxe version is a rolling design and revolves when rope contact is made on these side rollers instead of the primary front roller.

\_\_\_\_\_ On each side of the front exterior retaining surfaces of the framework are ~~vertical~~ horizontal cylindrical guides to retain the rope within the roller (chock) retaining area of the

~~Anchor Assist~~ anchor assist device both during regular anchoring operations and during anchor retrieval operations.

\_\_\_\_\_ ~~These guides are of two types, depending on the version selected. The regular version is non-rolling. The deluxe version is a rolling design and revolves vertically when rope contact is made on these side rollers instead of the primary front roller.~~

The framework can be of two design variations. One is a two-piece construction. The mounting base bracket is formed from of a single piece of metal cut in a flat sheet for shapes and holes then bent into the specified a 90x90-degree “U” shape. A single gusset plate is then fitted and welded ~~it~~ in place to provide rigidity and ~~the~~ serve as an anchor rest platform in the ~~Anchor Assist device.~~

\_\_\_\_\_ The other method, providing nearly identical results is, to construct ~~it~~ the framework of four flat pieces, two mirror images of the upright pieces and the bottom and gusset plates. The four pieces are then welded together resulting in a nearly identical product, with the same applications as discussed above.

\_\_\_\_\_ The design helps reduces the chance of that an anchor ~~that is being retrieved~~ would from swinging and hitting the sides of the boat as ~~it~~ the anchor is pulled. The ~~Anchor Assist~~ anchor assist device ~~it keeps it~~ the anchor away from the sides and gunnel as it comes into the rest position. ~~Other pullers require removing the rope from the anchor chock and pulling the buoy, retrieving mechanism, lead chain (when used) and anchor up and over the side of the bow, often damaging the gunnel or sides of the boat.~~

\_\_\_\_\_

The ~~Anchor Assist~~anchor assist device provides a ready position for the anchor to rest prior to releasing it for anchoring. A securing mechanism is designed into the frame that allows it to be securely fixed in place for movement from an anchor site to another anchor site or for travel via water or boat trailer.

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The ~~Anchor Assist~~anchor assist device also provides a cantilever position for the anchor to rest in its ready position on the bow. This design allows for a single person to release and drop the anchor with a lift of the rope from nearly any clear portion of a boat, i.e., near or at the steering wheel or the walk through bow window of many boat designs. This is of significant importance to persons such as guides and charter captains who might be responsible for all boat anchoring activities alone or for those boat owners/operators who ~~can't~~cannot or do not want to rely upon others to anchor for them.

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The ~~Anchor Assist~~anchor assist device provides a solid leverage and large rope guiding surface to allow use of the anchor retrieval systems from a bow attachment point. This is a significant safety factor for anchor retrieval in heavy current or rough water situations. When the pulled anchor is ready for retrieval, the rope is simply pulled through the anchor assist device until the anchor comes to rest in the ~~Anchor Assist~~device.

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The device works equally well without mechanical buoy type retrievers for anchoring and retrieving the anchor manually.

#### **~~BRIEF SUMMARY OF THE INVENTION~~**

~~The Anchor Assist is a wider and higher type of “U” shaped type of boat bow chock rope guide and anchor staging and storage devise which allows buoy type anchor retrieval devise to be pulled through the guide without rope removal. It is designed to allow pulling of the anchor via the buoy retrieval system with the rope routed through the Anchor Assist and attached to the bow or other forward cleat point. It is designed to allow the resting anchor to be easily released from its storage rest position by raising the anchor rope. This tipping of the anchor allows it to release and roll off the bow rest position into the water. The “U” shaped rest by use of a formed frame, gusset platform, rollers and guides provide a sure rope guide and a secure platform for anchor retrieval and storage. A pin device is used to secure the anchor in the rest position during transition or travel. The anchor lies on the rest, ready to release without the pin device installed. Other bow anchor rests and chocks do not allow retrieval of the anchor and retrieval mechanism without rope removal from the bow chock or guide. The anchor is in position for the next release when brought to rest in the Anchor Assist. The device works equally well without mechanical buoy type retrievers for anchoring and retrieving the anchor manually.~~

~~This device provides inventive changes with advantages over other existing designs.~~

## BRIEF DESCRIPTION OF DRAWINGS

~~\_\_\_\_\_ FIG. 1 is a flat pattern layout of the Anchor Assist “U” shaped bracket for an anchor assist device embodying the invention, laid out by a commercial fabricator (Versatech, Portland, Oregon) with shapes cut and holes formed prior to bending into the “U” shape required to form the mounting base and sides. Fabrication is not limited to a single fabricator,~~

~~and others can provide similar or identical service. The frame of the bracket can also be fabricated by hand with appropriate tools.~~

\_\_\_\_\_ FIG. 2 is a rear view (~~identical to front view~~) of the bracket shown in FIG. 1 after being formed by the fabricator but in the “U” shaped configuration prior to ~~before the~~ addition of the welded gusset plate.

\_\_\_\_\_ FIG.3 is a side view of the bracket shown in FIG. 2. ~~identifying overall measurements, shapes, hole locations and sizes.~~

\_\_\_\_\_ FIG. 4 is a rear view of an anchor assist device including the bracket shown in FIG. 2, showing the gusset plate welded in place, ~~with a center roller. Also shown are outer horizontal and vertical guides for one side, but omitting horizontal and vertical guides on the other side to show detail of the~~ ~~(the opposite side is an identical mirror image for these two parts).~~ The bolt head and thread end, washer, and a lock nut used for the center roller spindle, is shown where visible on the right and where it would otherwise have been concealed in the other UHMW plastic guide had it been drawn in. The left guides were left undrawn in this view to allow drawing this component clearly.

\_\_\_\_\_ FIG. 5 is a front view of the bracket showing horizontal and vertical guides for one side, but omitting horizontal and vertical guides on the other side. ~~, roller and guides, again with only one side of two of the outer guides drawn in. The opposite side guides are a mirror image unless specifically shown otherwise.~~

\_\_\_\_\_ FIG. 6 is a top view of the bracket with the gusset plate shown welded in place in relation to the bottom base.

\_\_\_\_\_ FIG. 7 is a top view of the anchor assist device shown in FIG. 4, showing the center UMHW-roller guide and all of the outer horizontal and vertical UMHW-guides.

\_\_\_\_\_ FIG. 8a is a side view of one of the UMHW-outer horizontal guides and FIG. 8b is a side view of the center roller ~~showing the counter sunk hole to obscure the bolt head and lock nut on each end. Also shown is the center hole for the bolt.~~ FIG. 8 also shows the spindle hole for the center roller spindle bolt.

\_\_\_\_\_ FIG. 9 is a side view of the anchor assist device as installed on the bow of a boat, showing the relationship of the upper fixed guide in relation to the lower outside guide. It also shows the base and roller guide assembly related to the bow mount.

\_\_\_\_\_ FIG. 10 is a top plan view of a portion of an anchor assist device that is an alternative embodiment, showing the alternate a upper vertical guide roller on one side and a modified bracket (instead of a fixed guide) and modification of bracket A that is required for the vertical guide roller, but omitting the vertical guide roller and modified bracket from the opposite side.



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FIG. 11 is a side view of the bracket shown in FIG. 10, showing the bracket modification (V) required for (S) installation and operation of the vertical guide roller.

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FIG. 12a is a side view and FIG. 12b is an exploded [rear view] of the an alternative vertical guide roller alternate upper roller bracket, and roller and relationship to lower outside guide.

\_\_\_\_\_  
FIG. 13 is a bottom view of the bracket portion of the anchor assist device, showing mounting holes (and optional hole location) for the most common boat applications.

\_\_\_\_\_  
FIG. 14 is direct a front elevational view with perspective of the fully assembled Anchor Assist anchor assist device shown in FIG. 4 and the elevation of the roller, guide and frame in relation to the boat bow deck.

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FIG. 15 is a front view of the device mounted on a boat.

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FIG. 16 is a top view of the device, with the center roller omitted to show the position of the device as mounted on a boat.

#### DETAILED DESCRIPTION OF THE INVENTIONPREFERRED EMBODIMENTS

~~LIST OF REFERENCE MARKS USED ON DRAWINGS (Capitol Letter preceding note)~~

~~With regard to reference letters used, the following letters are used throughout the drawings. These drawings are produced for use with the provisional patent application only as a reference to assist in understanding the invention and are not intended to become a part of the permanent record as called out in 35U.S.C.113. Due to 35U.S.C.113 requirements for drawings on a Utility Patent application, drawings meeting all requirements will accompany the forthcoming submission.~~

~~A—A “U” shaped bracket forming shown in FIGS. 1 and 2 includes the base A<sub>1</sub> and two sides A<sub>2</sub> of the Anchor Assist anchor device AA. A~~

~~B—The gusset plate B is welded in place between the two sides of A<sub>2</sub> forming an the anchor rest platform, and Can can be adjusted to fit a milled countersink to improve consistency in placement.~~

~~C—The A weld between two un-joined metal parts as shown. A~~

~~D—The UMHW plastic 3-1/2 inch diameter tapered center roller D<sub>1</sub> is installed at the front D<sub>2</sub> of the Anchor Assist anchor assist device AA, between two sides A<sub>2</sub>. Said The center roller D<sub>1</sub> may be formed of ultra high molecular weight (UMHMW) plastic polyethylene and is 3-1/2 inches in diameter. -~~

~~E—The UMHW plastic outer 3-1/2 inch diameter hHorizontal roller guides E<sub>1</sub> and E<sub>2</sub>, which are interchangeably affixede for to either side A<sub>2</sub> and are also formed of 3-1/2 inch diameter UMHWUHMW plastic polyethylene.~~

~~F—The UHMW plastic outer 1-1/2 inch diameter~~ Outer vertical guides F<sub>1</sub> and F<sub>2</sub> are also interchangeably affixed to either side A<sub>2</sub> and are formed of from UHMW 1-1/2 inch diameter UHMW plastic polyethylene with a 3-1/2 inch height.

~~G—1/4 inch dia, 2 inch~~ The vertical guides F<sub>1</sub> and F<sub>2</sub> are affixed to the sides A<sub>2</sub> by screws G<sub>1</sub> and G<sub>2</sub> eng, which may be 1/4 inch diameter, threaded stainless steel countersunk or phillips Phillips pan head screws with for and F.

~~H—1/4 inch locknuts. for G.~~

~~H1—the holes in A for I.~~ Each side A<sub>2</sub> has a through-hole H<sub>1</sub> to define the attachment location of the center roller D<sub>1</sub> and the horizontal roller guides E<sub>1</sub> or E<sub>2</sub> respectively.

~~H2—the bottom holes in A for G.~~ Each side A<sub>2</sub> also has a bottom hole H<sub>2</sub> and a top hole H<sub>3</sub> to receive the screws G<sub>1</sub> and G<sub>2</sub> for attachment of vertical guides F<sub>1</sub> and F<sub>2</sub>, respectively.

~~H3—the top holes in A for G.~~ Each side A<sub>2</sub> also has a carriage pin hole H<sub>4</sub> defining a location for a cotter-less carriage pin U, which in one embodiment is a 5/16 inch diameter x 4 1/2 inch long pin, to secure an anchor in the anchor assist device AA.

~~H4—the top holes for U.~~

~~H5—the~~ Each side A<sub>2</sub> also has a bottom storage hole for UH<sub>5</sub> for holding the carriage pin U when it is not being used to hold an anchor.

~~I—The tapered center roller D<sub>1</sub> and the horizontal roller guides E<sub>1</sub> and E<sub>2</sub> are mounted on and capable of rotation around a 1/2 inch diameter, 7 inch long hex head stainless steel bolt I, which extends through unthreaded from hex head end to a point at least through the opposite side each 1/2 inch hole H<sub>1</sub>, through a in A with the hex head side part E installed centrally drilled spindle hole M in each horizontal roller guide E<sub>1</sub> and E<sub>2</sub> and in the center roller D<sub>1</sub>.~~

~~J—A 1 inch" outside diameter, 1/2 inch hole stainless steel washer J and -a~~

~~K~~—1/2 inch stainless steel lock nut ~~K~~ (of Teflon insert or similar type)—secure bolt I in place in the bracket A, together with center roller D<sub>1</sub> and the horizontal roller guides E<sub>1</sub> and E<sub>2</sub>. Each of the horizontal roller guides E<sub>1</sub> and E<sub>2</sub> has a

~~L~~—a 1-1/2 inch diameter by 1/2 inch deep counter-sunk hole ~~L<sub>1</sub> and L<sub>2</sub>~~, in the outer side of E\_\_\_\_\_.

~~—a 1/2 inch diameter hole drilled in concentric alignment with at the center radius of part center roller D<sub>1</sub>, and E longitudinally through the center of the cylinder and spindle holes M.~~

~~N~~—the Each side A<sub>2</sub> has a top side N<sub>1</sub> and bottom side N<sub>2</sub> which are is parallel when the device is in installed to a boat gunnel. Each side A<sub>2</sub> has a sloped margin N<sub>3</sub> which extends from the top N<sub>1</sub> 45 degree angled portion of the bracket (either side) running from top N<sub>1</sub> to the bottom ~~at N<sub>2</sub> apex~~ at a 45 degree angle. Each side A<sub>2</sub> has 1-3/4 inch radius ~~The bottom front corners~~ roller support regions P<sub>1</sub> and P<sub>2</sub> respectively, which of each side A<sub>2</sub> form

○ NOT USED

~~P~~—the portion of the two side brackets which make up the 1-3/4 roller support horizontal roller guides ~~radius~~ E<sub>1</sub> and E<sub>2</sub> ~~P<sub>3</sub> and P<sub>4</sub>~~ respectively.

\_\_\_\_\_ There are at least two possible embodiments of bracket A. In one alternative embodiment of the bracket A, the ~~Q~~ Alternative method of making the base plate A<sub>1</sub> and the two sides A<sub>2</sub> into Part A are formed from a single sheet bent at right angles. In an alternative embodiment of the bracket A, the base plate A<sub>1</sub> and the sides A<sub>2</sub> are cut separately and welded together.

\_\_\_\_\_ The anchor assist device AA may alternatively include a front upper vertical roller guide S, shown in FIG. 10. Election to include the upper vertical roller guide S necessitates that bracket A should include support R. ~~R~~ Bracket for alternate front upper vertical roller guide.

~~S-Roller for alternate As shown, front upper vertical roller guide, 2" Dia x S has a 2-inch diameter and 2-1/4 inch length long with and defines a centered (Y)-hole Y 3/8 inch in diameter extending through it longitudinally. Roller spindle T extends through the hole Y in the upper vertical roller guide S and may be a T-3/8 inch diameter stainless steel hex head bolt (used as roller spindle). The Rroller spindle T secures the upper vertical roller guide S to support R at a 3/8" threaded hole X.~~

~~To accommodate the upper vertical roller guide S as shown in FIG. 10, the bracket A has to provide room and thus is smaller by an area that can be called a cut out U-5/16 inch diameter x 4 1/2 inch long cotter less carriage pin V at each side A<sub>2</sub>. The size reduction or cut out V, indicated in broken line in FIG. 11, measures -a 3/4" x 2-7/8". (A)-bracket modification for an alternate roller assembly.~~

~~The anchor assist device AA is mounted on a user's boat by fasteners H<sub>6</sub> and H<sub>7</sub>, such as 5/16 x 1 inch, 24 thread stainless steel hex head bolts or pan head Philips screws with washers and lock nuts. Said assemblies H<sub>6</sub> and H<sub>7</sub> should be as far forward on a bow deck Q as possible while retaining full contact between the base A<sub>1</sub> and the bow deck Q. The intended placement of the front D<sub>2</sub> is designed to extend the center roller D<sub>1</sub> beyond the bow Q.~~

~~X-a 3/8" threaded (drilled & tapped) hole in (R)~~

~~Y-3/8" x 2-1/4 hole.~~

In one exemplary embodiment, of the anchor assist device AA, the

## DETAILED DESCRIPTION OF THE INVENTION

(Description of the preferred Embodiments—How to make and use it.

[0001] A flat pattern Fig 1 (bracket A) is laid out on 1/4 ~~(.025)~~ (0.25) inch 5052 aluminum (or equivalent alternative) according to Figure 1.

[0002] Holes H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub>, H<sub>4</sub>, and H<sub>5</sub> of the specified diameters are punched or drilled per (H<sub>1</sub>), (H<sub>2</sub>), (H<sub>3</sub>), (H<sub>4</sub>), (H<sub>5</sub>), (H<sub>6</sub>), (H<sub>7</sub>), (H<sub>8</sub>) as shown in Fig 1 and Fig 3.

[0003] The outside perimeter lines of bracket A are cut preferably cut by ~~from 0001 as specified, means of choice is~~ computer-assisted plasma cutter or laser, or by means of a manually operated bandsaw. Fig 1.

Bracket A so cut from

[0004] The single piece flat pattern design as shown in (Fig. 1) is intended to be bent by a commercial fabricator in press equipment to a U shape (Fig 2) with the specified result of into a “U” shaped bracket A including base A<sub>1</sub> and two sides A<sub>2</sub> as shown viewed in Fig 2.

[0005] An alternative construction of said bracket A is shown addressed in Fig. 2, (Q) should a press not be available, is by separately cutting and welding the and constitutes a three piece construction of base A<sub>1</sub> and two sides A<sub>2</sub> base and two sides welded at 90 degree angles to construct achieve an exact faesimile of the “U” shaped bracket A including base A<sub>1</sub> and two sides A<sub>2</sub> formed part in [0004] with the inclusion of detail (Q).

With either construction of bracket A, the

[0006] A gusset plate (B) is placed as shown in ~~Fig.~~ figure 4 and Figure 6, and a clamp (~~not shown~~) is used to draw both sides  $A_2$  tight to (~~gusset B~~). Gusset B

[0007] (~~B~~) is held in place while being welded (C) to (A) sides  $A_2$  as shown by placing a 2 1/2 (2.5)-inch spacer (~~not shown~~) between the base of ~~A<sub>1</sub>A~~ and gusset B.

\_\_\_\_\_

[0008] A piece of 3-1/2 inch diameter UHMWUHMW plastic cylinder is cut to lengths for one tapered center roller ( $D_1$ ) and two horizontal guides  $E_1$  and  $E_2$  (E) as shown in parts, Fig. 4, Fig. 5, and Fig 7. The center roller  $D_1$  and two horizontal roller guides  $E_1$  and  $E_2$  are

[0009] ~~The piece cut for each of 0008 is drilled centrally with a spindle hole (M as shown in )~~  
Figure 8, (~~D~~) and (~~E~~). The Ccenter roller

[0010] ~~Part (D)  $D_1$~~  is placed on a lathe and turned to the shape shown in specifications on  
Figure 5, forming a center groove or radius  $D_5$ .

[0011] ~~Parts~~ Horizontal roller guides  $E_1$  and  $E_2$  (E) are drilled with a countersunk hole as  
~~specified for ( $L_1$  or  $L_2$ ) as shown in~~ Figure 5 and Figure 8a.

\_\_\_\_\_ Bolt

[0012] ~~Part (I) Fig-4~~ is fitted with one washer (J and ), inserted through horizontal roller  
guide  $E_1$  one (E) such that with the hex head of bolt part (I) fits into countersunk hole  $L_1$  and  
 $L_2$  Fig-5 fitting into (L). Bolt I

[0013] Part (I) is then placed through first hole H<sub>1</sub> (H1) Fig 3, then through center roller (D<sub>1</sub> (D)) Fig 4 & Fig 5, via (spindle hole M) Fig 8, and then through the second hole H<sub>1</sub> (H1) Fig 3.

Horizontal roller guide E<sub>2</sub> [0014] The second part (E) Fig 5 is placed on bolt I (I) Fig 5 followed by one washer (J) and lock nut (K) as shown in Fig 4.

[0015] Bolt (I) and lock nut (K) are tightened until secured, but leaving center roller D<sub>1</sub> (D) Fig 4, Fig 5 able to turn freely between roller supports P<sub>3</sub> and P<sub>4</sub> (P) Fig 3 & Fig 6 on right and left sides A<sub>2</sub>.

[0016] Fig. 7, (F) Top view and Fig. 4, (F) Rearview show the length and diameters of vertical guides F<sub>1</sub> and F<sub>2</sub>. Utilizing a planer, table saw or similar method, component- 1/8 inch of material is removed along a vertical (longitudinal) axis to form a flat mount surface F<sub>3</sub> on each of the vertical guides F<sub>1</sub> and F<sub>2</sub>. two parts (F) (utilizing a planer, table saw or similar method).

[0017] A 1-3/4 inch radius cut F<sub>4</sub> is made horizontally and perpendicular to the flat surface F<sub>3</sub> in each of the vertical guides F<sub>1</sub> and F<sub>2</sub>. created in [0016]. Vertical guides F<sub>1</sub> and F<sub>2</sub> Left and right sides are opposite mirror images of each other. The radius of the cut F<sub>4</sub> is 1-3/4" and is aligned so that it closely matches the curvature of (horizontal roller guides E<sub>1</sub> and E<sub>2</sub> (E)) on each side A<sub>2</sub> as shown in Fig. 4, (F) and Fig 9.

The vertical guides F<sub>1</sub> and F<sub>2</sub> [0018] Parts (F) are secured to bracket (A) by screws G<sub>1</sub> and G<sub>2</sub> (G) inserted from the inside face of (A) through bracket A at bottom hole H<sub>2</sub> and a top



hole ~~H<sub>3</sub>~~, (~~H2~~) and (~~H3~~), through either vertical guide ~~F<sub>1</sub>~~ and ~~F<sub>2</sub>~~ (~~F~~) and secured to ~~on the~~  
exterior faces A<sub>3</sub> of the side A<sub>2</sub> as shown in with (H), Fig 7.

~~[0019] Part (U) e~~ Cotter-less carriage pin U is placed in carriage pin hole - (H<sub>4</sub> H4) as shown in  
Fig 7, to secure ~~the an~~ anchor (not shown). Cotter-less carriage pin U It is placed in bottom  
storage hole H<sub>5</sub> (H5 as shown in) Fig. 3, while the anchor is in use or ~~in ready position for~~  
release. The device in this embodiment is model is ready to install on boat.

~~Proceed to [0026]~~ In an alternate embodiment known as the :

~~[0020] For Deluxe version, the vertical guides F<sub>1</sub> and F<sub>2</sub> omit [0016-0018 are omitted. and~~  
~~start with this step~~ Bracket (A) is modified according to the cut out to (V) as shown in, Fig.  
11. ~~Modification can be made to formed part or incorporated into [0001].~~

~~[0021] A support R is a 4-3/4" long piece of 1-3/4 x 3 aluminum channel is cut as shown in~~  
top plan view in according to (R) Figure 10.

~~[0022] A threaded hole (X), Fig 12, to be tapped for the threaded end of a 3/8" bolt (T) is~~  
drilled in each flange of the support R the bottom and is tapped in the bottom flange with  
threads (appropriate for roller spindle T). The Center hole ~~The top hole at (T) head end is~~  
3/8".

~~[0023] (Y) Fig 12 is cut as shown in according to Fig. 12, so that center hole (Rear View R).~~  
(Y), is drilled in (front upper vertical roller guide S) to Mmatch hole (X), allowing enough  
clearance for tolerance of the roller S to rotate on spindle of (T). ~~Side view H, Fig. 12 shows~~

the roller relationship between the roller guide (S) to and horizontal guides E<sub>1</sub> and E<sub>2</sub> guide (E).

#### The Ssupport

[0024] (R) is welded (C) to (to bracket A) as shown in , Fig. 10 and , Fig. 12. Carriage pin hole H<sub>4</sub> Hole (H4) in bracket (A) is drilled through support (R), as well as the underlying sides A<sub>2</sub>.

[0025] Roller guide (S) is placed in support (R). Roller spindle (T) is inserted through support (R) and roller guide (S) and into threaded hole (X).

#### Either embodiment of

[0026] Tthe Anchor Assist anchor assist device AA is installed on a user's boat by means of fasteners H<sub>6</sub> and H<sub>7</sub>, and H<sub>8</sub> shown as 5/16 x 1 inch, 24 thread stainless steel hex head bolts or pan head Philips screws with washers and lock nuts. The fasteners H<sub>6</sub> and H<sub>7</sub> should be as far forward on the bow deck Q as possible while retaining full contact between the base A<sub>1</sub> and the bow deck Q. The anchor assist device AA is designed to support the center roller D<sub>1</sub> at a position beyond the bow Q, as shown, for example, in FIG. 9.

H6) and (H7) Fig 1, Fig 10 and Fig 13, 5/16 x 1 inch, 24 thread Stainless Steel hex head bolts or pan head phillips screws, washers and lock nuts. Location should be as far forward on the bow deck as possible while retaining full contact between the base of (A) and the deck. A representative position is demonstrated in figure 9. The puller is designed to extend the rollers beyond the bow end. The resulting anchor assist device AA completed mechanism from the previous steps of manufacture offers a difference not previously available by means this metal step roller bracket which is designed to have a wide enough throat space, with 3 ½ inches, the length of the center roller D<sub>1</sub>, between the sides A<sub>2</sub> to accommodate the various buoy puller

mechanisms (such as, but not limited to, EZ Marine lifter, Ironwood Pacific puller, or other similar pullers) allowing retrieval and release of ~~an~~the anchor without removal of an anchor ~~the rope (not shown)~~ from the anchor assist device AA in the bow chock position. ~~which the~~  
~~Anchor Assist replaces.~~

## MEANS OF USE

{0027} Set In use of the anchor assist AA, an anchor will be placed on Anchor Assist the device, with anchor tines Z<sub>1</sub> of the anchor extended slightly past the bow of the boat assembly, so the anchor rests. It should rest on gusset B and center roller D<sub>1</sub>. The user will

{0028} Ready the rope release of an anchor retrieval system and/or prepare the anchor rope for release, and -

{0029} Approach the anchor drop area. The user will

{0030} Lift the rope and tip the anchor, readily prepared to feeding rope while allowing the anchor to drop to bottom.

{0031} Upon releasing adequate rope for safe anchoring, the user will tie or cleat off rope. The Rope remains through the "U" shaped bracket in the Anchor Assist device. This is positioned between the vertical side guides F<sub>1</sub> and F<sub>2</sub> and transitions over the roller guide D<sub>1</sub>, resting in the groove D<sub>3</sub>.

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{0032} For safest retrieval of the anchor, the user will assure secure the ment of anchor rope then move the boat safely upstream avoiding the anchor rope and retrieval buoy, as per mechanisms' instructions. The anchor rRope will remain in the "U" shaped bracket while pulling, ready for rope retrieval.

~~{0033}~~ Upon confirming ~~that the a~~Anchor has been retrieved by buoy and the boat is clear of downstream obstructions and boats, ~~the user will~~ untie ~~the anchor rope from securement and~~ then retrieve ~~the anchor rope~~ by pulling. ~~The R~~rope remains in “U-” ~~shaped bracket A,~~ between the vertical guides  $F_1$  and  $F_2$ . -Easiest retrieval is achieved if the boat is ~~positioned aligned~~ with the bow pointing toward the buoy to take advantage of the center roller  $D_1$ .

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~~{0034}~~ Upon reaching the retrieval buoy mechanism, firmly pulling the ~~anchor rope~~ will cause the ~~retrieval mechanism, buoy, anchor lead chain (if used), and the anchor to roll up over the center roller  $D_1$  and the anchor will settle into the storage and ready position, resting on the center roller  $D_1$  for either another anchor drop, or anchor securement with the cotter-less retainment pin U.~~

~~{0035}~~ With anchor systems, not utilizing a buoy retrieval system, ~~the user will~~ simply retrieve the ~~anchor rope, allowing it to be supported by the center roller  $D_1$ , as the boat slowly advances forward. When the anchor is lifted from bottom and pulled to surface, the user will continue pulling the on rope firmly and the anchor will roll over the center roller  $D_1$  and rest in its ready position.~~

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~~{0036}~~ Modifications in design and variations upon this can obviously be made on this present invention in light of the above teachings. These details in the above description illustrate some preferred embodiments and should not be construed as a limitation on the scope of the invention.

~~CLAIMS (Specification designated to end with claims).~~

~~I claim: In Another exemplary embodiment of this device, the~~

~~1. — A mechanical apparatus for boat anchor rest, rope guide check which will allow release and retrieval of anchors with mechanical buoy type pullers without removing the rope from the Anchor Assist guide, comprising:~~

~~a. — A base and two side plates forming a vertical "U" shape from the front and rear views as the framework for the guide.~~

~~b. — The two sides A<sub>2</sub> side plates in a. are sloped from bottom to top at 45 degrees from the rear of the bracket A a-towards the front D<sub>2</sub> until an elevation of 6 1/2 inches is reached. At the front D<sub>2</sub> there is a vertical surface extending to a roller position. The vertical surface is the framework for the upper guides F<sub>1</sub> and F<sub>2</sub> or rollers S that keep the rope in the guide and positioned over the center roller D<sub>1</sub> during all phases of use. From the roller position the frame work takes a circular radius toward the front and continues around until it achieves a position slightly higher than the baseplate.~~

~~The side plates have holes punched or drilled to accommodate the front roller and guide assembly, the vertical guide or roller assemblies and a cotter less retaining pin yet to be discussed in f, g and i.~~

~~c. — The baseplate in a. extends from rear to the end of the 45 degree in b. It has four mounting holes to accommodate fasteners for mounting to the structure of closed bow boats, those with a 6" minimum flat surface at gunnel bow intersection or others with adequate modification to accommodate safe mounting.~~

~~d. The frame in a. is either:~~

~~—— i. — Cut from a single flat piece of .025 (1/4) inch aluminum or other suitable metal and is bent at two 90 degree angles resulting in a "U" shaped bracket that is approximately one~~

~~and 1/2 times higher than wide. Sides  $A_2$  are affixed to the base  $A_1$  at 90 degree angles resulting in a “U” shaped bracket that is approximately one and 1/2 times higher than wide.~~

The minimum inside to inside horizontal measurement ~~width between the sides  $A_2$  is 3-1/2 inches and may be made wider to accommodate deluxe versions of the device that include vertical rollers  $S$  instead of fixed guides  $F_1$  and  $F_2$  on the front uprights of the device  $AA$ .~~

~~\_\_\_\_\_ ii. \_\_\_\_\_ Cut from flat pieces of 1/4 aluminum or other suitable metal in three pieces, one base and two side plates. These side plates are then welded to the base plate at two 90 degree angles resulting in a “U” shaped bracket that is approximately one and 1/2 times higher than wide. The minimum inside to inside horizontal measurement is 3-1/2 inches and may be made wider to accommodate deluxe versions that include vertical rollers instead of fixed guides on the front uprights of the device.~~

~~e. \_\_\_\_\_ A gusset plate  $B$  which will form the anchor rest is placed horizontally in d. at a position which will form a platform height equal to the roller height. The gusset plate will extend from the rear of the bracket forward toward the roller position in b and will be the same length as the base plate  $A$  and . The gusset plate will be welded into position on b. to form the platform of the anchor rest and to increase bracket strength and uniformity.~~

~~f. \_\_\_\_\_ A center roller of 3-1/2 inch diameter UHMW plastic (or similar material), with a 1/2 inch hole at the center radius of the cylinder for spindle bolt. The cylinder center (roller )  $D_1$  width is approximately equal in length to the inside width of the “U” bracket  $A$  in d. The center roller  $D_1$  has a centered 3/4 inch deep rope guide configuration, tapered at the beginning, ending with a vertical slot groove equal to the in width of the intended rope diameter to be used. It is positioned in between the front frame radius noted in b.~~

~~g. A guide made of the same diameter roller material as in f. and the same thickness as the vertical guides or rollers yet to be discussed in i. or j. is positioned outside of radius b. one on each side of the frame work.~~

~~h. The horizontal two-roller guides  $E_1$  and  $E_2$  in g. and center the roller  $D_1$  in f. are secured in place with a fastener assembly including a 1/2 stainless steel hex bolt, washers, and a lock nut. The fastener assembly is drawn to a tightness which allows the center roller to freely rotate on its axis center radius  $D_2$ . The horizontal outside guides  $E_1$  and  $E_2$  are not designed as rollers, but act primarily as abrasion protectors to prevent the anchor rope from contacting the metal framework during anchor operations and use, but. They can be modified to roll by adjusting the fastener assembly.~~

~~In one embodiment, vertical vi. A vertical guides  $F_1$  and  $F_2$  are guide is placed on the exterior surfaces of b. These serve the same purpose as h. They extend from the roller height to the top of the bracket. It is made of 1-1/2 cylinder of UHMW UHMW plastic polyethylene (or similar material,) with a 1/8 inch of the cylinder material removed from the outer cylinder radius along a vertical axis, to form a flat mounting surface  $F_3$  on each guide  $F_1$  and  $F_2$ . The vertical guides  $F_1$  and  $F_2$  They are installed above the center of the center roller  $D_1$  on the exterior of the vertical face  $A_3$  of the bracket A by means of screws  $G_1$  and  $G_2$  the two holes noted in b. and two bolts and lock nuts, which The lock nuts may be are left exposed to assist in keeping an anchor the rope on the guide during the pulling process in the event the boat position on the water surface changes significantly. There is a radius cut  $F_4$  in this the vertical guides  $F_1$  and  $F_2$  that matches the radius of the respective horizontal roller cylindrical guide  $E_1$  or  $E_2$  immediately below below it noted in g. The radius cut  $F_4$  prevents pinching of an opening into which the anchor rope might pinch during the pulling process.~~

~~j. Alternately a bracket and roller can be substituted for i.~~



(1) ~~The bracket is manufactured from preformed channel stock and cut in a tapered shape with a radius slightly smaller than the roller stock. A 3/8" hole is drilled in near center of the radius, adjusted to accommodate the roller size. The bottom hole is tapped with threads. The bracket is welded to d. positioning it at the location of i.~~

(2) ~~The roller is secured by a 3/8 fastener serving as a roller spindle.~~

k. ~~A cotter less keeper pin is placed in the upper rearmost 5/16 inch. hole to secure the anchor during transport or storage. The pin is placed through one side, above the anchor and through one the anchors breakaway chain links and into the hole on the opposite side. A hole through the anchor shaft may be used alternately. l. The details in the above description illustrate some preferred embodiments and should not be construed as a limitation on the scope of the invention. The completed device, either version, is of unique design and as described in the detailed description is unique in the ability to store the anchor, drop the anchor, and retrieve the anchor with retrieval mechanisms without requiring the removal of the rope. These features, designed to work with the retrieval mechanisms, also allow it the device to function well as a standard bow chock or guide for an un-buoyed anchor line and anchor.~~

The following is a clean version of the foregoing amended specification.

#### ABSTRACT

The An anchor retrieval assist device including a “U” shaped type of boat bow chock-rope guide and anchor staging and storage device which allows buoy type anchor retrieval devices to be pulled through the guide without rope removal. It is designed to allow pulling of an anchor via the buoy retrieval system with a rope routed through the device and attached to a forward cleat on a boat. The anchor can be easily released from its storage-rest position by raising the anchor rope, tipping the anchor to allow it to roll off the bow rest position into the water. A pin is provided to secure the anchor in the rest position. The device works equally well with or without mechanical buoy type retrievers for anchoring and retrieving the anchor manually.

## BACKGROUND AND SUMMARY OF THE INVENTION

The anchor assist device was designed and created for boat anchoring to fill a void in the market for boat anchoring and retrieval of anchor systems utilizing mechanically designed anchor float retrieval systems. Other pullers require removing the rope from the anchor chock and pulling the buoy, retrieving mechanism, lead chain (when used) and anchor up and over the side of the bow, often damaging the gunnel or sides of the boat.

In this device, the anchor puller and buoy are able to be pulled through the wider roller and guide system without removal from the rope guide. The primary design difference, not previously available, is the use of a metal step roller bracket which is designed to have a wide enough throat space to accommodate the various buoy puller mechanisms (such as, but not limited to EZ Marine lifter, Ironwood Pacific puller, and other types) with vertical guides to keep the rope in the device while the puller transitions through it and buoy transitions over it.

The anchor assist device is a wider and higher type of “U” shaped type of boat bow chock-rope guide and anchor staging and storage device which allows buoy type anchor retrieval devices to be pulled through the guide without rope removal. It is designed to allow pulling of the anchor via the buoy retrieval system with the rope routed through the device and attached to the bow or other forward cleat point. It is designed to allow the resting anchor to be easily released from its storage-rest position by raising the anchor rope. This tipping of the anchor allows it to release and roll off the bow rest position into the water. The “U” shaped rest, formed by a frame, gusset platform, rollers and guides, provides a sure rope guide and a secure platform for anchor retrieval and storage. A pin device is used to secure the anchor in the rest position during transition or travel. The anchor lies on the device in the rest position, ready to release without the pin device installed. The anchor is in position for the next release

when brought to rest in the anchor assist device. The device works equally well without mechanical buoy type retrievers for anchoring and retrieving the anchor manually.

A tapered center roller guide (of UHMW polyethylene or similar material), of large enough diameter allows the transition from rope end, past the lifter hardware and on to the anchor chain (when used) and directly to the anchor, so that the anchor settles to rest in the bracket on the gusset platform and center roller guides in the bracket. A rope groove is cut in the center of the center roller guide to help provide a positive center line position for the rope while at anchor.

Outside vertical right and left side guides fashioned from the same material as the center roller guide (UHMW polyethylene) provide a smooth protective surface for the rope to ride against when under power of retrieval and keep the rope from contacting the outer extremities of the metal mount or rest roller framework. These guides may be either of two types, depending on the version selected. The regular version is non-rolling. The deluxe version is a rolling design and revolves when rope contact is made on these side rollers instead of the primary front roller.

On each side of the front exterior retaining surfaces of the framework are horizontal cylindrical guides to retain the rope within the roller (chock) retaining area of the anchor assist device both during regular anchoring operations and during anchor retrieval operations.

The framework can be of two design variations. One is a two-piece construction. The mounting bracket is formed from of a single piece of metal cut in a flat sheet for shapes and holes then bent into a “U” shape. A single gusset plate is then fitted and welded in place to provide rigidity and serve as an anchor rest platform in the device.

The other method, providing nearly identical results is, to construct the framework of four flat pieces, two mirror images of the upright pieces and the bottom and gusset plates. The

four pieces are then welded together resulting in a nearly identical product, with the same applications as discussed above.

The design helps reduce the chance that an anchor being retrieved would swing and hit the sides of the boat as the anchor is pulled. The anchor assist device keeps the anchor away from the sides and gunnel as it comes into the rest position.

The anchor assist device provides a ready position for the anchor to rest prior to releasing it for anchoring. A securing mechanism is designed into the frame that allows it to be securely fixed in place for movement from an anchor site to another anchor site or for travel via water or boat trailer.

The anchor assist device also provides a cantilever position for the anchor to rest in its ready position on the bow. This design allows for a single person to release and drop the anchor with a lift of the rope from nearly any clear portion of a boat, i.e., near or at the steering wheel or the walk through bow window of many boat designs. This is of significant importance to persons such as guides and charter captains who might be responsible for all boat anchoring activities alone or for those boat owners/operators who cannot or do not want to rely upon others to anchor for them.

The anchor assist device provides a solid leverage and large rope guiding surface to allow use of the anchor retrieval systems from a bow attachment point. This is a significant safety factor for anchor retrieval in heavy current or rough water situations. When the pulled anchor is ready for retrieval, the rope is simply pulled through the anchor assist device until the anchor comes to rest in the device.

The device works equally well without mechanical buoy type retrievers for anchoring and retrieving the anchor manually.

## BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a flat pattern layout of the “U” shaped bracket for an anchor assist device embodying the invention.

FIG. 2 is a rear view of the bracket shown in FIG. 1 after being formed by the fabricator but in the “U” shaped configuration prior to the addition of the welded gusset plate.

FIG. 3 is a side view of the bracket shown in FIG. 2.

FIG. 4 is a rear view of an anchor assist device including the bracket shown in FIG. 2, showing horizontal and vertical guides for one side, but omitting horizontal and vertical guides on the other side to show detail of the bolt, washer, and a lock nut used for the center roller spindle.

FIG. 5 is a front view of the bracket showing horizontal and vertical guides for one side, but omitting horizontal and vertical guides on the other side.

FIG. 6 is a top view of the bracket with the gusset plate shown welded in place in relation to the bottom base.

FIG. 7 is a top view of the anchor assist device shown in FIG. 4, showing the center roller guide and all of the outer horizontal and vertical guides.

FIG. 8a is a side view of one of the horizontal guides and FIG. 8b is a side view of the center roller.

FIG. 9 is a side view of the anchor assist device as installed on the bow of a boat.

FIG. 10 is a top plan view of a portion of an anchor assist device that is an alternative embodiment, showing a vertical guide roller on one side and a modified bracket that is required for the vertical guide roller, but omitting the vertical guide roller and modified bracket from the opposite side.

FIG. 11 is a side view of the bracket shown in FIG. 10, showing the bracket modification required for installation of the vertical guide roller.

FIG. 12a is a side view and FIG. 12b is an exploded rear view of an alternative vertical guide roller bracket.

FIG. 13 is a bottom view of the bracket portion of the anchor assist device, showing mounting holes and optional hole location for the most common boat applications.

FIG. 14 is a front elevational view of the fully assembled anchor assist device shown in FIG. 4 and the elevation of the roller, guide and frame in relation to the boat bow deck.

FIG. 15 is a front view of the device mounted on a boat.

FIG. 16 is a top view of the device, with the center roller omitted to show the position of the device as mounted on a boat.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A “U” shaped bracket shown in FIGS. 1 and 2 includes the base  $A_1$  and two sides  $A_2$  of the anchor device AA. A gusset plate B is welded in place between the two sides  $A_2$  forming an anchor rest platform, and can be adjusted to fit a milled countersink to improve consistency in placement. A tapered center roller  $D_1$  is installed at the front  $D_2$  of the anchor assist device AA, between two sides  $A_2$ . The center roller  $D_1$  may be formed of ultra high molecular weight (UHMW) polyethylene and is 3-1/2 inches in diameter. Horizontal roller guides  $E_1$  and  $E_2$  are interchangeably affixed to either side  $A_2$  and are also formed of 3-1/2 inch diameter UHMW polyethylene. Outer vertical guides  $F_1$  and  $F_2$  are also interchangeably affixed to either side  $A_2$  and are formed of 1-1/2 inch diameter UHMW polyethylene with a 3-1/2 inch height. The vertical guides  $F_1$  and  $F_2$  are affixed to the sides  $A_2$  by screws  $G_1$  and  $G_2$ , which may be 1/4 inch diameter, threaded stainless steel countersunk or Phillips pan head screws with 1/4 inch

locknuts. Each side  $A_2$  has a through-hole  $H_1$  to define the attachment location of the center roller  $D_1$  and the horizontal roller guides  $E_1$  or  $E_2$  respectively. Each side  $A_2$  also has a bottom hole  $H_2$  and a top hole  $H_3$  to receive the screws  $G_1$  and  $G_2$  for attachment of vertical guides  $F_1$  and  $F_2$ , respectively. Each side  $A_2$  also has a carriage pin hole  $H_4$  defining a location for a cotter-less carriage pin  $U$ , which in one embodiment is a 5/16 inch diameter x 4 1/2 inch long pin, to secure an anchor in the anchor assist device  $AA$ . Each side  $A_2$  also has a bottom storage hole  $H_5$  for holding the carriage pin  $U$  when it is not being used to hold an anchor.

The tapered center roller  $D_1$  and the horizontal roller guides  $E_1$  and  $E_2$  are mounted on and capable of rotation around a 1/2 inch diameter, 7 inch long hex head stainless steel bolt  $I$ , which extends through each 1/2 inch hole  $H_1$ , through a centrally drilled spindle hole  $M$  in each horizontal roller guide  $E_1$  and  $E_2$  and in the center roller  $D_1$ .

A 1 inch outside diameter, 1/2 inch hole stainless steel washer  $J$  and a 1/2 inch stainless steel lock nut  $K$  (of Teflon insert or similar type) secure bolt  $I$  in place in the bracket  $A$ , together with center roller  $D_1$  and the horizontal roller guides  $E_1$  and  $E_2$ . Each of the horizontal roller guides  $E_1$  and  $E_2$  has a 1-1/2 inch diameter by 1/2 inch deep countersunk hole  $L_1$  and  $L_2$ , drilled in concentric alignment with center roller  $D_1$  and spindle holes  $M$ .

Each side  $A_2$  has a top side  $N_1$  and bottom side  $N_2$  which are parallel when the device is installed to a boat gunnel. Each side  $A_2$  has a sloped margin  $N_3$  which extends from the top  $N_1$  to the bottom  $N_2$  at a 45 degree angle. Each side  $A_2$  has 1-3/4 inch radius bottom front roller support regions  $P_1$  and  $P_2$  respectively, which support horizontal roller guides  $E_1$  and  $E_2$  respectively.

There are at least two possible embodiments of bracket  $A$ . In one embodiment of the bracket  $A$ , the the base plate  $A_1$  and the two sides  $A_2$  are formed from a single sheet bent at



right angles. In an alternative embodiment of the bracket A, the base plate A<sub>1</sub> and the sides A<sub>2</sub> are cut separately and welded together.

The anchor assist device AA may alternatively include a front upper vertical roller guide S, shown in FIG. 10. Election to include the upper vertical roller guide S necessitates that bracket A should include support R. As shown, front upper vertical roller guide S has a 2-inch diameter and 2-1/4 inch length and defines a center hole Y 3/8 inch in diameter extending through it longitudinally. Roller spindle T extends through the hole Y in the upper vertical roller guide S and may be a 3/8 inch diameter stainless steel hex head bolt. The roller spindle T secures the upper vertical roller guide S to support R at a 3/8" threaded hole X.

To accommodate the upper vertical roller guide S as shown in FIG. 10, the bracket A has to provide room and thus is smaller by an area that can be called a cut out V at each side A<sub>2</sub>. The size reduction or cut out V, indicated in broken line in FIG. 11, measures 3/4" x 2-7/8".

The anchor assist device AA is mounted on a user's boat by fasteners H<sub>6</sub> and H<sub>7</sub>, such as 5/16 x 1 inch, 24 thread stainless steel hex head bolts or pan head Philips screws with washers and lock nuts. Said assemblies H<sub>6</sub> and H<sub>7</sub> should be as far forward on a bow deck Q as possible while retaining full contact between the base A<sub>1</sub> and the bow deck Q. The intended placement of the front D<sub>2</sub> is designed to extend the center roller D<sub>1</sub> beyond the bow Q.

In one exemplary embodiment, of the anchor assist device AA, the bracket A is laid out on 1/4 (0.25) inch 5052 aluminum (or equivalent alternative) according to Figure 1. Holes H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub>, H<sub>4</sub>, and H<sub>5</sub> are punched or drilled as shown in Fig 1 and Fig 3. The outside perimeter lines of bracket A are preferably cut by computer-assisted plasma cutter or laser, or by means of a manually operated bandsaw.

Bracket A so cut from the single piece flat pattern design as shown in Fig. 1 is intended to be bent by a press into a “U” shaped bracket A including base  $A_1$  and two sides  $A_2$  as shown in Fig 2.

An alternative construction of said bracket A shown in Fig. 2, should a press not be available, is by separately cutting and welding the base  $A_1$  and two sides  $A_2$  to construct the “U” shaped bracket A including base  $A_1$  and two sides  $A_2$ .

With either construction of bracket A, the gusset plate B is placed as shown in Fig. 4 and Fig. 6, and a clamp (not shown) is used to draw both sides  $A_2$  tight to gusset B. Gusset B is held in place while being welded to sides  $A_2$  by placing a 2 1/2 inch spacer (not shown) between the base  $A_1$  and gusset B.

A piece of 3-1/2 inch diameter UHMW plastic cylinder is cut to lengths for one tapered center roller  $D_1$  and two horizontal guides  $E_1$  and  $E_2$  as shown in Fig. 4, Fig. 5, and Fig 7. The center roller  $D_1$  and two horizontal roller guides  $E_1$  and  $E_2$  are drilled centrally with a spindle hole M as shown in Fig. 8. The center roller  $D_1$  is placed on a lathe and turned to the shape shown in Figure 5, forming a center groove or radius  $D_5$ . Horizontal roller guides  $E_1$  and  $E_2$  are drilled with a countersunk hole  $L_1$  or  $L_2$  as shown in Fig. 5 and Fig. 8a.

Bolt I is fitted with one washer J and inserted through horizontal roller guide  $E_1$  such that bolt I fits into countersunk hole  $L_1$  and  $L_2$ . Bolt I is then placed through first hole  $H_1$ , then through center roller  $D_1$ , via spindle hole M, and then through a second hole  $H_1$ .

Horizontal roller guide  $E_2$  is placed on bolt I followed by one washer J and lock nut K as shown in Fig 4. Bolt I and lock nut K are tightened until secured, but leaving center roller  $D_1$  able to turn freely between roller supports  $P_3$  and  $P_4$  on sides  $A_2$ .

Fig. 7 and Fig. 4 show the length and diameters of vertical guides  $F_1$  and  $F_2$ . Utilizing a planer, table saw or similar method, 1/8 inch of material is removed to form a flat mount

surface  $F_3$  on each of the vertical guides  $F_1$  and  $F_2$ . A 1-3/4 inch radius cut  $F_4$  is made horizontally and perpendicular to the flat surface  $F_3$  in each of the vertical guides  $F_1$  and  $F_2$ . Vertical guides  $F_1$  and  $F_2$  are opposite mirror images of each other. The radius cut  $F_4$  is aligned so that it closely matches the curvature of horizontal roller guides  $E_1$  and  $E_2$  on each side  $A_2$  as shown in Fig. 4 and Fig 9.

The vertical guides  $F_1$  and  $F_2$  are secured to bracket A by screws  $G_1$  and  $G_2$  inserted through bracket A at bottom hole  $H_2$  and a top hole  $H_3$ , through either vertical guide  $F_1$  and  $F_2$  and secured to exterior faces  $A_3$  of the side  $A_2$  as shown in Fig 7.

Cotter-less carriage pin U is placed in carriage pin hole  $H_4$  as shown in Fig 7, to secure an anchor (not shown). Cotter-less carriage pin U is placed in bottom storage hole  $H_5$  as shown in Fig. 3, while the anchor is in use or ready for release. The device in this embodiment is ready to install on boat.

In an alternate embodiment known as the Deluxe version, the vertical guides  $F_1$  and  $F_2$  are omitted. Bracket A is modified according to the cut out V as shown in Fig. 11. A support R is a 4-3/4" long piece of 1-3/4 x 3 aluminum channel cut as shown in top plan view in Fig. 10. A threaded hole X is drilled in each flange of the support R and is tapped in the bottom flange with threads appropriate for roller spindle T. The center hole Y is cut as shown in Fig. 12, so that center hole Y is drilled in front upper vertical roller guide S to match hole X, allowing enough clearance for the roller S to rotate on spindle T. Fig. 12 shows the relationship between the roller guide S and horizontal guides  $E_1$  and  $E_2$ . The support R is welded to bracket A as shown in Fig. 10 and Fig. 12. Carriage pin hole  $H_4$  in bracket A is drilled through support R, as well as the underlying sides  $A_2$ . Roller guide S is placed in support R. Roller spindle T is inserted through support R and roller guide S and into threaded hole X.

Either embodiment of the anchor assist device AA is installed on a user's boat by means of fasteners H<sub>6</sub>, H<sub>7</sub>, and H<sub>8</sub> shown as 5/16 x 1 inch, 24 thread stainless steel hex head bolts or pan head Philips screws with washers and lock nuts. The fasteners H<sub>6</sub> should be as far forward on the bow deck Q as possible while retaining full contact between the base A<sub>1</sub> and the bow deck Q. The anchor assist device AA is designed to support the center roller D<sub>1</sub> at a position beyond the bow Q, as shown, for example, in FIG. 9.

The resulting anchor assist device AA is designed to have a wide enough throat space, with 3 ½ inches, the length of the center roller D<sub>1</sub>, between the sides A<sub>2</sub> to accommodate the various buoy puller mechanisms such as, but not limited to, EZ Marine lifter, Ironwood Pacific puller, or other similar pullers allowing retrieval and release of an anchor without removal of an anchor rope (not shown) from the anchor assist device AA in the bow chock position.

In use of the anchor assist AA, an anchor will be placed on the device, with anchor tines Z<sub>1</sub> extended slightly past the bow of the boat, so the anchor rests on gusset B and center roller D<sub>1</sub>. The user will ready the rope release of an anchor retrieval system or prepare the anchor rope for release, and approach the anchor drop area. The user will lift the rope and tip the anchor, feeding rope while allowing the anchor to drop to bottom. Upon releasing adequate rope for safe anchoring, the user will tie or cleat off rope. The rope remains through the "U" shaped bracket in the device, positioned between the vertical side guides F<sub>1</sub> and F<sub>2</sub> and over the roller guide D<sub>1</sub>, resting in the groove D<sub>3</sub>.

For safest retrieval of the anchor, the user will secure the anchor rope then move the boat safely upstream avoiding the anchor rope and retrieval buoy. The anchor rope will remain in the "U" shaped bracket, ready for rope retrieval. Upon confirming that the anchor has been retrieved by buoy and the boat is clear of downstream obstructions and boats, the user will

untie the anchor rope and then retrieve the anchor rope by pulling. The rope remains in “U” shaped bracket A, between the vertical guides  $F_1$  and  $F_2$ . Easiest retrieval is achieved if the boat is positioned with the bow pointing toward the buoy to take advantage of the center roller  $D_1$ .

Upon reaching the retrieval buoy mechanism, firmly pulling the anchor rope will cause the retrieval mechanism, buoy, anchor lead chain (if used), and the anchor to roll up over the center roller  $D_1$  and the anchor will settle into the storage and ready position, resting on the center roller  $D_1$  for either another anchor drop, or anchor securement with the cotter-less retainment pin U.

With anchor systems, not utilizing a buoy retrieval system, the user will simply retrieve the anchor rope, allowing it to be supported by the center roller  $D_1$ , as the boat slowly advances forward. When the anchor is lifted from bottom and pulled to surface, the user will continue pulling the on rope firmly and the anchor will roll over the center roller  $D_1$  and rest in its ready position.

In another exemplary embodiment of this device, the two sides  $A_2$  are sloped from bottom to top at 45 degrees from the rear of the bracket A towards the front  $D_2$  until an elevation of 6 1/2 inches is reached. At the front  $D_2$  there is a vertical surface extending to a roller position. The vertical surface is the framework for the upper guides  $F_1$  and  $F_2$  or rollers S that keep the rope in the guide and positioned over the center roller  $D_1$  during all phases of use. From the roller position the frame work takes a circular radius toward the front and continues around until it achieves a position slightly higher than the baseplate.

Sides  $A_2$  are affixed to the base  $A_1$  at 90 degree angles resulting in a “U” shaped bracket that is approximately one and 1/2 times higher than wide. The minimum inside width between the sides  $A_2$  is 3-1/2 inches and may be made wider to accommodate deluxe versions

of the device that include vertical rollers S instead of fixed guides F<sub>1</sub> and F<sub>2</sub> on the front uprights of the device AA.

A gusset plate B will be the same length as the base plate A and will be welded into position to form the platform of the anchor rest and to increase bracket strength and uniformity.

The center roller D<sub>1</sub> is approximately equal in length to the inside width of the bracket A. The center roller D<sub>1</sub> has a centered 3/4 inch deep rope guide configuration, tapered at the beginning, ending with a vertical groove equal in width to the intended rope diameter to be used.

The horizontal roller guides E<sub>1</sub> and E<sub>2</sub> and center roller D<sub>1</sub> are secured in place with a fastener assembly including a 1/2 stainless steel hex bolt, washers, and a lock nut. The fastener assembly is drawn to a tightness which allows the center roller to freely rotate on its axis center radius D<sub>2</sub>. The horizontal guides E<sub>1</sub> and E<sub>2</sub> act primarily as abrasion protectors to prevent the anchor rope from contacting the metal framework during anchor operations and use, but can be modified to roll by adjusting the fastener assembly.

In one embodiment, vertical guides F<sub>1</sub> and F<sub>2</sub> are made of 1-1/2 cylinder of UHMW polyethylene or similar material, with a 1/8 inch of the material removed to form a flat mounting surface F<sub>3</sub> on each guide F<sub>1</sub> and F<sub>2</sub>. The vertical guides F<sub>1</sub> and F<sub>2</sub> are installed above the center of the center roller D<sub>1</sub> on the exterior vertical face A<sub>3</sub> of the bracket A by means of screws G<sub>1</sub> and G<sub>2</sub>, which may be left exposed to assist in keeping an anchor rope on the guide during the pulling process in the event the boat position on the water surface changes significantly. There is a radius cut F<sub>4</sub> in the vertical guides F<sub>1</sub> and F<sub>2</sub> that matches the radius of the respective horizontal roller guide E<sub>1</sub> or E<sub>2</sub> immediately below it. The radius cut F<sub>4</sub> prevents pinching of the anchor rope during the pulling process.

The details in the above description illustrate some preferred embodiments and should not be construed as a limitation on the scope of the invention. The completed device, either version, is of unique design and as described in the detailed description is unique in the ability to store the anchor, drop the anchor, and retrieve the anchor with retrieval mechanisms without requiring the removal of the rope. These features, designed to work with the retrieval mechanisms, also allow the device to function well as a bow chock or guide for an un-buoyed anchor line and anchor.